

HEARING AND COMMUNICATION

ALL DIVISIONS

Resource Guide
1992

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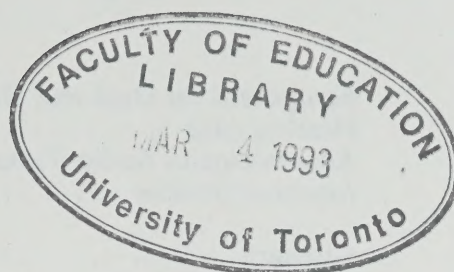
Ministry
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Introduction

This document is intended to provide guidance for teachers who may have the responsibility for designing appropriate learning environments, educational programs, and learning strategies for deaf and hard-of-hearing students within their classrooms. It has been written primarily for teachers whose classrooms contain mostly students with normal hearing and who are encountering deaf and hard-of-hearing students for the first time. Thus this document will be most useful for teachers of students who are educated with their hearing peers, communicate in oral English, and make some use of their residual hearing.

The content of this document is based on the premise that the “image of the learner” as defined by the Ministry of Education applies to deaf and hard-of-hearing students in the same way as it does to their hearing peers. Like all students, each deaf or hard-of-hearing student is unique. Consequently, the techniques and suggestions offered here must be adapted to reflect this individuality.

A further premise underlying this document is that teachers dealing with deaf and hard-of-hearing students should consider themselves members of an educational team. The education of these students should be a co-operative effort of resource consultants, school administrators, family members, audiologists, speech and language pathologists, medical personnel, and teaching staff. Because the education of deaf and hard-of-hearing students is complex, teachers should seek advice and use all available resources, many of which are listed in this document.

This document begins by reviewing the range of hearing loss experienced by students and progresses to practical considerations relevant to the development and implementation of educational programs. The document also contains a section on the equipment available for use with deaf and hard-of-hearing students, a glossary of terms and vocabulary that may be unfamiliar to some readers, and an annotated bibliography.

A Note on the Placement of Deaf and Hard-of-Hearing Students

The Ministry of Education encourages Ontario school boards to provide a range of placements for all exceptional students, including deaf and hard-of-hearing students. Such placements may include placement in a regular class with program modifications, placement in a small group for instruction within the regular classroom or on a withdrawal basis, placement in a special education class, and, on occasion, residential placement in a Ministry of Education Provincial School.

School boards are encouraged to provide local programs for deaf and hard-of-hearing students, since it is important to allow students to remain in their local community settings whenever possible. A regular school setting, however, may not serve the needs of all deaf and hard-of-hearing students, and some students may prefer placement in a special school such as a Provincial School for the deaf. Furthermore, appropriate placements for these students may vary at different stages of their development. It is important, therefore, for parents and educators to be sensitive to the wishes of deaf and hard-of-hearing students and to respect their preferences at different stages of their education. For example, it is not uncommon for deaf and hard-of-hearing students to request alternative placements during their adolescent years, especially when those placements increase their opportunities to be part of a deaf community such as a Provincial School.

Deaf and hard-of-hearing students who attend a Provincial School can learn to communicate effectively with their peers in a supportive environment that takes into account the visual nature of their learning process. These special schools provide a rich communication environment and emphasize the importance of deaf culture as part of the total education of students. Through their special programs and services, which are not readily available in a regular school setting, the schools provide resident students with a strong support system. Moreover, these schools employ deaf staff members who, in addition to their normal duties, serve as excellent role models for students.

In Provincial Schools, communication with deaf and hard-of-hearing students is usually carried out in sign language, either in American Sign Language (ASL) or in a system of sign-supported English which uses a combination of signs and English. These methods of communication take advantage of the students' ability to communicate visually rather than aurally. The shared use of a visual language and the positive acceptance of deafness as a difference rather than a handicap are the two underlying principles of the programs in these schools.

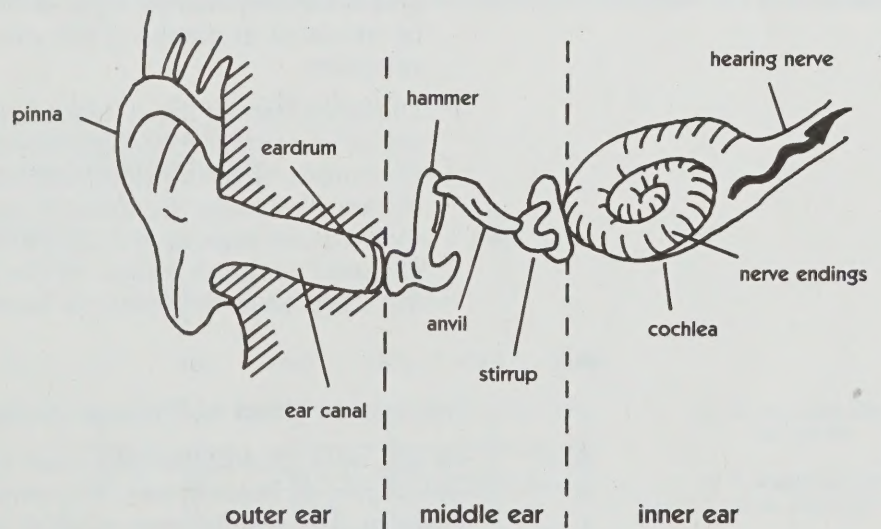
Since this document is intended for teachers of deaf and hard-of-hearing students in a regular classroom setting, it does not address the kinds of accommodations and programming modifications that one would find in special education schools. For more information about the needs of deaf and hard-of-hearing students who use sign language as their main communication tool, educators may contact one of the Provincial Schools directly.

Some Basic Information About Hearing Loss

How We Hear

Sound is caused by vibrations. These are funnelled by the outer ear through the ear canal to the eardrum, causing it to vibrate in rhythm with the sound vibrations. Three tiny bones in the middle-ear cavity then transmit the sound vibrations from the eardrum to a membrane called the *oval window*, which leads to the inner ear. The sound vibrations cause the fluid in the cochlea (see the accompanying diagram) to move and activate minuscule sensory hair cells, which transform the mechanical sound energy into electrical nerve impulses. These impulses travel along the acoustic nerve to the cortex of the brain, where the sound is perceived.

Figure 1: The hearing mechanism



Types and Causes of Hearing Loss

A hearing loss usually falls into one of the following three categories:

- A *conductive hearing loss* exists when a problem in the outer or middle ear inhibits the transmission of sound to the inner ear. The most common cause of a conductive hearing loss is ear infection (otitis media), which is usually medically treatable.

- A *sensorineural hearing loss* exists when a problem in the inner ear causes a decrease in clarity and loudness. It can have many causes, including heredity, noise, injuries, and meningitis and other diseases. This type of hearing loss is not medically treatable.
- A *mixed hearing loss* is the combination of a conductive and a sensorineural hearing loss.

Of the many types of hearing loss those derived from otitis media and meningitis and unilateral hearing losses are perhaps the most common.

- *Hearing losses resulting from otitis media.* *Otitis media* is the medical term for an ear infection, and it is the cause of hearing loss for the largest group of hard-of-hearing students. The middle ear in the infant and young child is particularly susceptible to an invasion by bacteria and viruses. In the case of otitis media, fluid accumulates in the middle-ear cavity. This causes an inflammation of the middle ear, which may result in a conductive hearing loss or, in severe cases, in a sensorineural loss.

The course of ear infections varies and is unpredictable. Some cases resolve themselves within short periods of time, while others last for months or recur. The usual treatment is with antibiotics, sometimes accompanied by a decongestant. If the infection persists, the doctor may recommend a surgical procedure (myringotomy and tympanostomy). If the infection is chronic or if it has gone undetected for some time, a permanent hearing loss may result.

- *Meningitis-induced losses.* Hearing losses caused by meningitis range from mild to severe but are usually in the severe to profound range (see table 1). They are especially disturbing because they are sudden and drastically change a person's life. A multidisciplinary team should be involved in planning the educational program of students in this category.
- *Unilateral hearing losses.* Unilateral hearing losses can produce a variety of communication difficulties, such as not being able to identify the source of sound (localization), hearing unclearly because of the distance between the listener and the sound source, and missing information because of background noise. Preferential seating and frequent comprehension checks can be effective strategies for helping students with unilateral hearing losses.

Procedures Used to Determine Hearing Loss

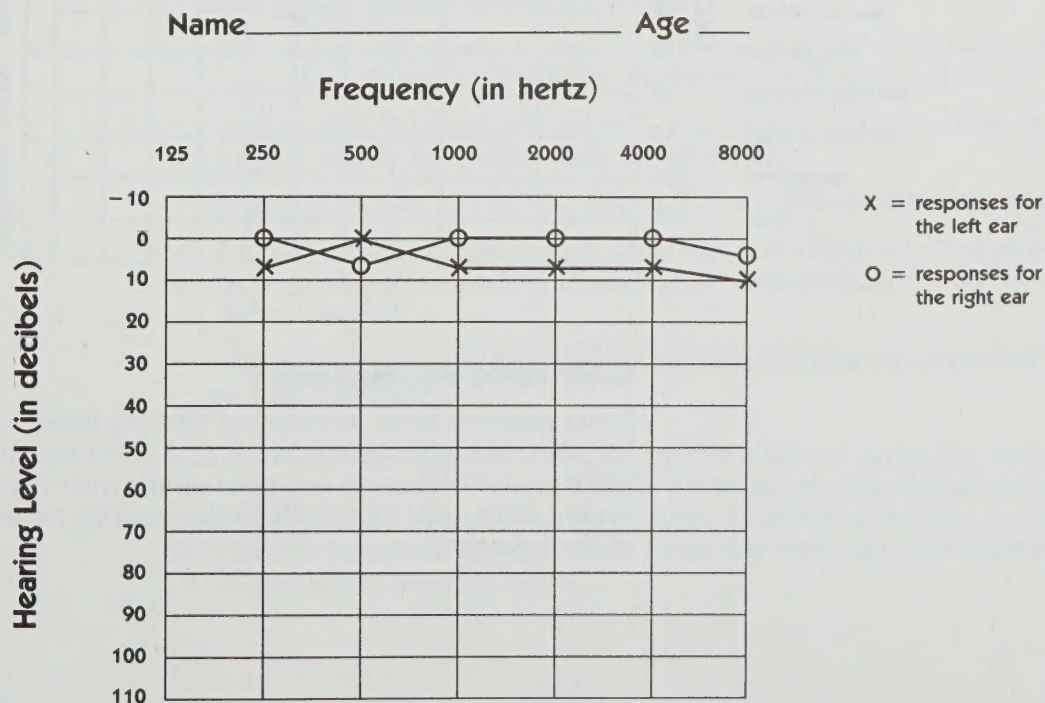
An ear, nose, and throat physician and an audiologist identify the type and degree of hearing loss. The physician checks the ear canal and the eardrum. The results from medical and audiological tests determine whether medical treatment or surgery is possible.

The audiologist administers a variety of hearing tests in a soundproof room. The basic test results are recorded on a graph called an *audiogram* (see figure 2), which shows the hearing threshold for different pitches of sound. A hearing threshold is the quietest sound intensity that a person can hear.

Table 1: Hearing-loss scale

Hearing Threshold in Decibels (dB)	Descriptive Term	Communicative Problems The listener:
-10-25 dB	Normal hearing	— especially a young child in the process of learning language, may experience some difficulty in the range of 16-25 dB;
26-40 dB	Mild hearing loss	— has difficulty hearing faint or distant speech; — may benefit from an assistive listening device;
41-55 dB	Moderate hearing loss	— understands conversational speech at a distance of 0.9-1.5 m; — needs a hearing aid;
56-70 dB	Moderately severe hearing loss	— understands only loud conversation; — has great difficulty in group activities; — needs a hearing aid;
71-90 dB	Severe hearing loss	— may hear a loud voice about 30 cm from his or her ear; — may identify environmental noises; — may distinguish vowels but not consonants; — needs a hearing aid;
91+ dB	Profound hearing loss	— may hear some loud sounds without an aid; — may benefit from a hearing aid.

Figure 2: Hearing thresholds of a person with hearing in the normal range

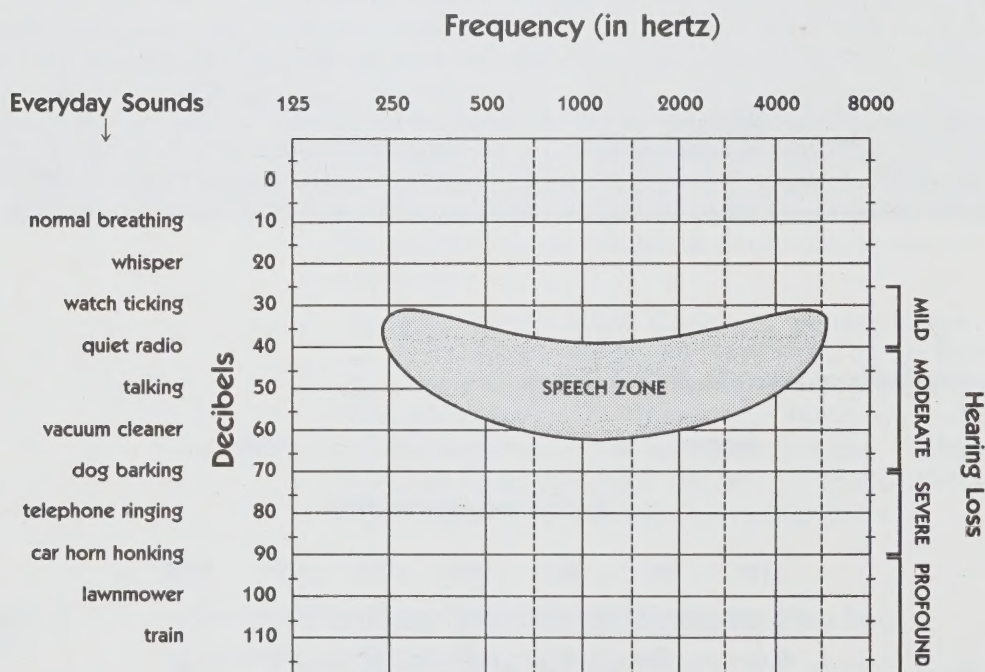


Intensity levels (volume) are measured in decibels (dB) on a scale from 0 to 120. These intensity levels can be found for varying frequencies – from low-pitch sounds at 125 Hz (hertz or cycles per second) to high-pitch sounds at 8000 Hz (see figure 3).

Each ear is tested with earphones to provide information on the functioning of the hearing mechanism as a whole. The test is then redone with a vibrator placed on the mastoid bone behind the ear to test the inner ear on its own. These procedures are called *pure-tone audiometry*.

Speech audiometry is then performed. It consists of words repeated at different levels of intensity. The results of these tests confirm the previously tested hearing thresholds and can also be used to determine speech discrimination abilities.

Figure 3: Speech sounds and some environmental sounds in relation to intensity (dB) and frequency (Hz). The different categories of hearing loss are also identified.



Undetected Hearing Losses

Some students have undetected hearing losses that may be responsible for poor academic performance and behaviour problems. Some of these students learn to compensate for their hearing losses by using coping skills such as speechreading and by closely following the actions of their peers.

Students with an undetected hearing loss may:

- be unduly restless and weary;
- often seem inattentive;
- often withdraw from group activities to play or work alone;
- tend to associate with younger children, who offer them an easier level of language and acceptance;
- continuously have failing grades or marks;
- make numerous requests for repetitions;
- be unable to follow directions (they watch other students for clues);
- often show an inability to hear when in a group or in a noisy environment;
- fail to respond in question periods;
- pay undue attention to the face of a speaker;
- turn one ear to the speaker in an attempt to hear more easily;
- mispronounce words or omit or substitute sounds (they fail to pronounce final consonants; for example, /s/ is often the first sound to be omitted with a high-frequency loss);
- have a voice quality that is extreme, resulting in an unusually loud or weak or high or low voice;
- have frequent colds, earaches, or runny ears;
- be chronic mouth breathers;
- have chronic allergies;
- demonstrate signs of frustration (e.g., acting out, withdrawal, depression).

Teachers who suspect that a student may have a hearing loss can:

- check the student's record folder to see whether there has been any previous evidence of a hearing loss;
- confer with the student, the school nurse, a speech-language consultant, other resource personnel, or the student's family doctor;
- confer with the student's parents (e.g., to share observations or to inquire about the child's early development);
- suggest that the student be referred to a public health program;
- submit a report to the speech-language consultant or other resource personnel recommending audiological assessment through the student's doctor;
- confer with the guidance department (in the case of secondary school students).

Some students can slip through the regular auditory screening tests. For example, one of the most difficult situations may be a fluctuating hearing loss that is missed in several tests. Thus the classroom teacher's observations continue to be the best guide for reporting and following up on suspected hearing losses.

Much preschool and Primary classroom instruction depends on verbal communication. Students who suffer repeated, fluctuating hearing losses will receive inconsistent auditory signals and may experience difficulties first in understanding speech and ultimately in learning. Teachers and parents should be aware that such children are educationally and socially at risk.

Deaf and Hard-of-Hearing Students With Multiple Exceptionalities

Students with a learning disability. A dual exceptionality can seriously affect intellectual and academic growth. Deaf and hard-of-hearing students who also have a learning disability will require many different experiences in a great variety of learning environments in order to develop their cognitive and social skills. They should be given explicit directions and specific information on the teacher's expectations regarding the organization and management of their work, and, as with all students, they should be constantly encouraged and given positive reinforcement regarding their achievements. As well, they should have access to learning aids such as computers and calculators. Strategies for working with these students can be found in *Handbook for Teachers of Students With Learning Disabilities* (Toronto: Ministry of Education, Ontario, 1986).

Students with an intellectual exceptionality. A multidisciplinary team approach is required to address the needs of students with an intellectual exceptionality. Misdiagnosis may result because of a student's inability to respond accurately to formal tests of auditory capacity, and audiologists may be required to use a variety of assessment techniques. While there may be gifted and talented deaf and hard-of-hearing students in every school population, their accurate identification is often a difficult task, and consultation with both specialists in the assessment of gifted students and resource personnel for deaf and hard-of-hearing students is essential. Strategies for working with these students can be found in *Planning for Independence: A Support Document for Teachers of Students With Intellectual Disabilities* (Toronto: Ministry of Education, Ontario, 1990) and *Programming for the Gifted* (Toronto: Ministry of Education, 1985).

Students with physical exceptionalities. Deaf and hard-of-hearing students who also have physical exceptionalities should be assisted by a multidisciplinary team of people, including a physical or occupational therapist if necessary. Augmentative modes of communication may be necessary for these students, as their motor abilities may impede or restrict their personal expression.

Deaf-blind (multisensory-deprived) students. Deaf-blind students are not deaf students who cannot see or blind students who cannot hear. Theirs is not an additive problem – deafness plus blindness – nor is it a problem that is limited solely to communication and perception. Deaf-blindness is characterized by difficulties in the following developmental areas: cognition, perception, communication, gross- and fine-motor skills, living/community skills, and orientation and mobility.

Deaf-blind individuals cannot use the sense of either vision or hearing to receive sufficient non-distorted information to compensate for the loss of the other sense. Their vision and hearing may be lost at the same time or independently, and the loss of either may be immediate or gradual. Thus, these individuals will each have a unique combination of visual and hearing loss, and their sensory input channels may also be damaged.

When it is suspected that deaf-blindness exists or may be developing in an individual, the following diagnostic procedure should be carried out:

- An examination of the individual's hearing and vision should be completed by specialists experienced in deaf-blindness.
- An assessment of the individual's functional abilities should be undertaken by qualified, experienced specialists in the medical, social, and educational fields.

The Ontario Ministry of Education recognizes deaf-blindness as a unique disability. The deaf-blind child and his or her family have the option of receiving assistance from the provincial resource services designed to support the child in the local school or of having the child attend a residential program at the W. Ross Macdonald School. Further information regarding these programs may be obtained by contacting The Superintendent, W. Ross Macdonald School, 350 Brant Avenue, Brantford, Ontario N3T 3J9.

Cultural Factors and Hearing Loss: English-As-a-Second-Language Students

A new Canadian student who is deaf or hard-of-hearing might have some skills in English or in his or her first language. However, this student may have had little or no educational support in the past because of the unavailability of regular or special education facilities. For example, amplification might be a totally new experience for the student.

The student's functioning levels should be assessed through informal and formal testing, although a period of adjustment is necessary before formal evaluation can take place. The academic level of the student should be determined from reports and samples of work from previous school settings.

A family orientation program should also be provided. One of the many issues to address with the student's family is the cultural acceptance of hearing loss. Such issues should be explored in collaboration with a resource person from the same cultural background as the student.

The Learning Environment

The Physical Learning Environment

While individuals with normal hearing find it difficult to learn and concentrate in a noisy environment, it is even more difficult for those who have a hearing loss. The very nature of hearing loss makes it difficult to separate the relevant from the irrelevant and to discriminate one auditory cue from another. As well, hearing aids amplify all sounds, and since classrooms, full of active students, contain a great deal of sound, this background noise is amplified along with the teacher's voice.

The learning environment is affected by the following acoustic factors:

- *the signal-to-noise ratio.* As the distance between the student and the teacher increases, the ability to discriminate speech decreases. Although everyone has more difficulty distinguishing speech in a noisy environment than in a quiet one, this is particularly a problem for deaf and hard-of-hearing students. Thus it is important to minimize background noise in a classroom.
- *reverberation.* The noise or echo found in places that contain hard, flat surfaces, such as indoor swimming pools and gymnasiums, affects the individual's perception of speech.
- *distance.* As the distance from the hearing aid to the sound source increases, the intensity of the speech signal at the child's ear decreases proportionately.

It is clear that special attention should be paid to the noise level and acoustics in the classroom, which should be organized to facilitate students' interaction with peers, adults, and materials. Teachers will find the following suggestions useful in adapting the learning environment to suit the needs of deaf or hard-of-hearing students:

- Try various classroom seating arrangements to find the one suitable to the individual's learning style and strength. The better ear of a deaf or hard-of-hearing student should be directed towards the teacher, and the student should have a clear line of sight to the speaker.
- Encourage deaf and hard-of-hearing students to move to a quiet area of the classroom when the need arises; group discussions should also be moved to a quiet area when possible.
- Reduce noise in the classroom by teaching with the door closed, covering tables in activity centres with cloth, placing felt bumper pads on the legs of chairs, and covering floors with carpets.
- If possible, choose a classroom for deaf and hard-of-hearing students that is located away from potential sources of noise.

- Interchange quiet times with more active times to provide the necessary breaks for deaf and hard-of-hearing students.
- When it is impractical to reduce noise levels at playtime in the early grades, be more conscious of the need to provide visual support for conversation.
- When the student is listening, encourage him or her to sit nearby or to maintain visual contact with the person speaking. On field trips, for example, the student could stay within sight of the speaker and make use of an FM system, if one is available.
- Listening centres may be appropriate for some deaf and hard-of-hearing students. However, their value must be assessed on an individual basis. Variables such as volume, distortion of the signal, and language level should all be considered.
- Use audio-input patch cords to improve the auditory signal to FM systems, as well as to reduce the internal noise produced by machines (e.g., projectors, TVs). The Canadian Hearing Society, educational audiologists, and itinerant teachers of deaf and hard-of-hearing students can provide information regarding the purchase of patch cords. Some additional information on patch cords is also provided in this document in the section entitled "Equipment for Deaf and Hard-of-Hearing Students".
- Since misunderstandings are common because of noise interfering with the student's perception of instructions and messages, check frequently to determine how much the student has understood. Instead of asking questions that demand a simple yes or no answer, have the student paraphrase the information or review the key points.
- Plan ways to ensure that deaf and hard-of-hearing students have access to public-address announcements and special messages.
- Ensure that deaf and hard-of-hearing students sit near the front in assemblies; ask speakers to wear FM transmitters and remind them that deaf and hard-of-hearing students will be speechreading.
- Before assemblies are held, provide deaf and hard-of-hearing students with the vocabulary they will require to understand key concepts and with other relevant background knowledge.
- Provide a scribe for deaf and hard-of-hearing students. (See "Support Services: The Co-operative Process" on pages 18-23.)
- Consider the proximity of loudspeakers to the seating of students during musical productions. (They should not be too close.)

Regardless of the degree of hearing loss, visual aids and visual information can greatly enhance deaf and hard-of-hearing students' comprehension. While auditory information is fleeting and requires instant processing, visual or graphic information can be relatively permanent, can be referred to after its initial presentation, and does not require instant processing. Teachers should consider the following strategies when supplementing auditory input:

- Adopt a visual, graphic methodology (e.g., write down page numbers, assignments, and special messages).
- Demonstrate concepts by using concrete materials.
- Use pictures, charts, and photographs whenever possible.

- Use the chalkboard or overhead projector for summaries, key words, sketches, lesson outlines, titles, and topics. A written outline or some form of visual back-up can greatly enhance understanding for deaf and hard-of-hearing students, especially in environments that are poor acoustically.
- Use dramatization or role play when appropriate.
- Use captioned movies and videos, or try to obtain a script or prepare a summary for the student to read before showing a movie or video.
- Be aware that deaf and hard-of-hearing students cannot take notes and keep their eyes on the teacher for speechreading at the same time; thus the sharing of notes may be necessary.

The Social and Emotional Environment

Introduction. All students have an inherent need to belong to groups in order to grow socially and emotionally. However, a hearing loss, by its very nature, impedes communication and thus may have serious implications for the social development of deaf and hard-of-hearing students. No single behaviour, however, is common to all deaf and hard-of-hearing students. Thus it cannot be assumed that an individual will behave in a certain way just because of a hearing loss.

Usually the individual's behaviour is the result of growing up with a hearing loss. Some deaf and hard-of-hearing individuals may be unaware of appropriate conduct and social norms, because what they perceive through their impaired ability to communicate and to hear may not include what is obvious to those with normal hearing. The fostering of socialization skills is thus especially important for these students. Teachers can assist them by indicating appropriate social and behavioural expectations and encouraging them to achieve these goals.

The self-esteem and social well-being of deaf and hard-of-hearing students may, in fact, be as important to their future as adults as their academic knowledge and skills. Educational programs should therefore take into consideration the whole child, including social and emotional development, psychological status, and academic and communication skills.

Early childhood development. The infant who is deaf or hard of hearing may not be easily distinguishable from the hearing infant to most observers. However, the toddler will frequently manifest greater differences, since this is the time when extensive trials with speech and connected language occur in hearing children. The gap between the hearing and the deaf or hard-of-hearing child may continue to widen without appropriate intervention. Extended social situations for the young deaf or hard-of-hearing child may include early learning activities: nursery school, regular home-visiting programs such as those provided by Provincial Schools and some school boards, as well as Junior Kindergarten and Kindergarten programs.

Young children normally develop social skills under the care of and within the environment provided by families and communities. While household routines, visits with friends and relatives, community events, and family interests all combine to influence the development of social

skills, the most significant element is the communicative interaction between children and their families. Depending on their hearing status, linguistic level, and personal strengths, young deaf and hard-of-hearing children may need ongoing social support during their school years.

The Primary years. While all children require nurturing in the Primary years in order to reach higher levels of social competence, this is especially true for children with communication exceptionalities. For this reason the development of social skills in young deaf and hard-of-hearing children frequently requires the co-ordinated effort of several individuals.

Because of their dependency on others for information exchange from an early age, deaf and hard-of-hearing students may appear socially immature. Their development of a positive self-image may also be restricted because of a delay in linguistic competency. As they mature, they may require continued support and guidance to develop feelings of self-worth and self-confidence, which will influence their academic and social behaviour. Since individuals develop their personal values and capabilities as they interact with others, students are most likely to acquire positive social behaviours when they have the opportunity to experience a sense of belonging and identification with their peers.

Adolescence. Adolescence is a very critical stage of development. It is usually a time when the individual moves away from the protection of the home and the influence of parents and teachers and begins to make some decisions independently. Support, guidance, and understanding are critical at this stage of development.

Adolescents' social behaviour revolves around discussions of themselves and others in colloquial language that is specific to their age and time. This puts deaf or hard-of-hearing students at a disadvantage and makes socialization more difficult for them, which is especially critical since the influence of peers is very important at this age. Unless the deaf or hard-of-hearing student possesses exceptional communication skills, he or she may require some assistance in the use of this language in order to communicate with peers. In fact, a combined effort of both the home and the school may be necessary to address the feelings of frustration and isolation that the deaf or hard-of-hearing student may have. For example, a parent or empathetic peer may be requested to help the deaf or hard-of-hearing student become familiar with some of the current slang expressions.

Teachers and counsellors must be sensitive to students' needs to ensure that they feel comfortable with their peers and the school environment. Guidance services can be especially planned so that students can share their feelings and concerns. This will also facilitate the reinforcement and promotion of healthy social interaction.

Improving the environment through information sharing. An understanding of the implications of a hearing loss can best be achieved if there is effective communication among school personnel, deaf and hard-of-hearing students, and peers. To eliminate misunderstandings, staff members (e.g., teachers, custodial staff, lunchroom staff, office staff) should be aware of deaf and hard-of-hearing students and of the academic and social difficulties that they may encounter (e.g., they may not hear the school bell or fire alarm; they may not be able to speech-read or understand directions from an unfamiliar person). This might be achieved through a meeting at the beginning of the school year. Care should be taken to prevent the inadvertent taking of disciplinary action against these students when linguistic complexities or insufficient hearing may be the issue.

Students' peers should also be made aware of their communication needs. Understanding peers can go a long way towards the alleviation of any feelings of worthlessness and despair and can also provide deaf and hard-of-hearing students with a supportive social network.

It is important that deaf and hard-of-hearing students be taught to take some responsibility for sharing information about hearing loss and amplification and for alerting others to difficult situations. This could be accomplished through a classroom question-and-answer session, or the class could be asked to respond to a list of situations that present problems to the deaf or hard of hearing by role-playing coping strategies. The understanding of peers might also be heightened if they were asked to experience a hearing loss through a classroom simulation. While sincere curiosity should be encouraged in all such activities, the teacher and hearing students should always be considerate of the feelings of deaf and hard-of-hearing students.

Class presentations could be arranged on topics such as how the ear works, noise pollution, the importance of hearing protection, how a hearing aid works, the difficulties a deaf or hard-of-hearing individual encounters, and equipment for the deaf or hard of hearing (e.g., closed-captioned decoders, silent alarms, Bell Relay Service). These could be used to provide a foundation for further discussion and might be provided by audiologists, speech and language pathologists, parents, teachers of the deaf, or staff from the Canadian Hearing Society. A deaf or hard-of-hearing adult could also be invited to share experiences about deafness with the class. Finally, a visit could be arranged to an audiology clinic or a mobile hearing clinic so that students can observe a hearing assessment.

Checklist of Social Skills

The following checklist is provided to help teachers observe the social development of their students.

Does the student:

- _____ volunteer to answer questions in class?
- _____ participate in small-group discussions?
- _____ participate in class discussions?
- _____ attend to an activity?
- _____ look forward to learning new information?
- _____ understand and follow directions?
- _____ have the ability to work independently?
- _____ seek clarification when necessary?
- _____ behave in a co-operative manner?
- _____ make good use of time?
- _____ make him- or herself understood by peers?
- _____ make him- or herself understood by school personnel?
- _____ interact with peers?
- _____ find acceptance by peers in social situations?
- _____ have a "best friend"?
- _____ have a network of friends?
- _____ have supportive friends?
- _____ show self-control?
- _____ adapt to new situational demands?
- _____ have the ability to deal with anger and frustration effectively?
- _____ use socially acceptable behaviour in the classroom?
- _____ use socially acceptable behaviour outside of class?

Support Services: The Co-operative Process

Introduction

The educational needs of deaf and hard-of-hearing students are addressed most appropriately by a team approach. The team should be child-centred and should include the home, the school, and the community. At home parents have the responsibility for the well-being of the child. They should feel confident that they will enjoy the support of both the school and the community.

At school the classroom teacher is the person most directly responsible for the child. His or her attitude towards the deaf or hard-of-hearing student is crucial to the child's behavioural development, social acceptance, and academic achievement. The teacher should feel at ease with a deaf or hard-of-hearing student in the class, knowing that support services are available from many highly qualified professionals. The multidisciplinary approach that prevails today ensures that all of these support services are available on a regular and ongoing basis.

In-School Support

In-school support varies with the school system and students' needs. It might include such specialized personnel as a special education coordinator, an itinerant teacher of the deaf and hard-of-hearing, an educational audiologist, a speech and language pathologist, and a consultant from a Ministry of Education Provincial School or the Centre Jules-Léger. Parents and educational personnel should regularly exchange information (e.g., through letters, telephone calls, or a journal) about the deaf or hard-of-hearing child's needs, strengths, and progress, including medical, psychological, social, and emotional aspects, as well as those related to education.

Peer Support

Deaf and hard-of-hearing students, like all other students, want to be accepted by their peers. They desire to be "one of the crowd" rather than outsiders. Thus it is very important for their social and emotional development that they achieve such acceptance.

Students often model their attitudes towards deaf and hard-of-hearing students after those of their teachers. For example, if a teacher tends to ignore a deaf or hard-of-hearing student, the other students may do the same. Similarly, if the teacher finds it difficult to make a deaf or hard-of-hearing student feel a part of the class, it will be much more difficult for this student to be accepted by classmates. If the teacher is

flexible and sensitive, however, students are likely to model such attitudes. If modifications in the program are accepted with understanding rather than annoyance and if positive comments rather than complaints predominate, there will be a wider acceptance not only for the deaf or hard-of-hearing student but for all class members.

Peers can be involved in many ways. Four of the most common are as buddies, notetakers, scribes, and tutors.

Buddies. Sometimes deaf and hard-of-hearing students may not hear everything a teacher says or may not understand what is meant. Asking for someone to volunteer to be a buddy or appointing a buddy for a deaf or hard-of-hearing student usually proves to be a solution to social as well as educational difficulties.

Buddies can help their deaf and hard-of-hearing peers by:

- clarifying announcements made over the school's public address system;
- repeating the answers to questions that are missed because of classroom noise;
- restating directions or procedures before a classroom activity begins;
- alerting deaf and hard-of-hearing students to unexpected events or changes in routines (e.g., fire alarms, special messages);
- filling in details and information to help students follow classroom discussions.

The buddy system should be managed carefully:

- It should be treated seriously so that proper conduct will result.
- Classmates can take turns acting as a buddy for a deaf or hard-of-hearing student, and "the privilege of helping someone else" can be rotated among them.
- A special buddy might be assigned for special classes (e.g., gym, library).
- The teacher should monitor the arrangement to ensure that it is going smoothly for both parties and that the buddy is not resenting the task or finding it a burden.

Peer notetakers. Some deaf and hard-of-hearing students are unable to speechread the teacher and take notes simultaneously. The peer notetaker can assist by taking responsibility for the notes. This will alleviate frustration and anxiety in the deaf or hard-of-hearing student, who may have felt that important information was being missed.

The notetaker should have legible handwriting and should use a well-organized format. Special notetaking paper (NCR or no-carbon-required paper) can be placed under the notetaker's notes to provide a duplicate for the deaf or hard-of-hearing student, or the notes can be mechanically copied. A notebook should be available for jotting down specific assignments, pages to be read, homework, information on remedial classes, key words from the public address system, and so on. The deaf or hard-of-hearing student should feel comfortable in asking for clarification.

It is valuable to have several peers who are willing to act as notetakers in case absence from school, fatigue, or other concerns prevent one notetaker from being available. The notetakers should be monitored on an ongoing basis throughout the year.

Some consideration should be given to making parents of notetakers aware of their children's involvement in this valuable service. Notetakers should also receive some recognition for their contributions.

Peer scribes. A peer scribe is a student who provides concise information in point form on the chalkboard or on an overhead projector transparency to augment what the teacher has said. A scribe is of particular use during a debate, discussion, or brainstorming session, where it is helpful to have a record of the facts presented. A peer scribe does not replace a notetaker, but acts as an adjunct. Students can take turns acting as scribes.

Peer tutors. Peer tutors may assist a deaf or hard-of-hearing student to review work or improve skills that have been covered in class. They can be especially helpful before a test or an examination. They should have expertise in the subject area to which they are assigned and they should be willing to accept directions and management from the teacher in charge. In the case of a peer-tutor relationship, it is important that the teacher ensure that a proper blend of personalities and abilities exists and that the relationship between the students is useful and workable. Different tutors can be assigned for different subjects and at different times of the year.

Support for French-speaking Students Who Are Deaf or Hard of Hearing

The following services for deaf or hard-of-hearing students from French-speaking families are available at the Centre Jules-Léger, a Demonstration School of the Ministry of Education administered by the Faculty of Education, University of Ottawa:

- preschool services
- educational consultative services
- educational programming with a residential component for French-speaking deaf or hard-of-hearing students who would otherwise be enrolled in a provincial school for the deaf
- resource workshops to assist teachers in serving deaf and hard-of-hearing students
- courses in manual communication for parents and teachers
- research and development
- audiological services in French at the Children's Hospital of Eastern Ontario in Ottawa

Requests for resource assistance should be addressed to the Program Co-ordinator, Centre Jules-Léger, Faculty of Education, University of Ottawa, 200 Wilbrod Street, Ottawa, Ontario K1N 6N5.

Community and Institutional Support

There are many services available within the community to support deaf and hard-of-hearing students and their families. Volunteers from the community can offer many of the services provided by peers. The following resource people can also assist the classroom teacher: physicians (family physicians, pediatricians, and otolaryngologists), nurses, audiologists, hearing-aid dispensers, social workers, and community sports and leisure coaches.

Hospitals in large urban centres usually provide aural-habilitation programs for infants and preschool children. Residents of small or rural communities can make use of similar services through the resource centre of one of the Ministry of Education's Provincial Schools.

Three Provincial Schools provide English services for deaf and hard-of-hearing students in Ontario: the Robarts School in London, the Ernest C. Drury School in Milton, and the Sir James Whitney School in Belleville. Resource services for Francophone deaf and hard-of-hearing students are available from the Centre Jules-Léger in Ottawa.

These resource centres provide teachers, students, parents, and school boards with audiological services, speech-language consultation, psychological services, family services, and social-work support. The following are two widely used services:

- *home-visiting preschool program.* Teachers trained to work with deaf and hard-of-hearing students visit the homes of preschool children and offer counselling to parents in the areas of hearing-aid usage, auditory development, language and communication, child development, and many other issues related to hearing loss.
- *educational consultants.* Trained personnel consult with school boards on program planning, equipment recommendations, integration, and teaching strategies for individual students. They provide frequent workshops for classroom teachers, resource teachers, consultants, principals, parents, and students.

Requests for resource assistance should be addressed to the resource centres at the following addresses:

The Robarts School
1090 Highbury Avenue
London, Ontario
N5Y 4V9

The Ernest C. Drury School
255 Ontario Street South
Milton, Ontario
L9T 2M5

The Sir James Whitney School
350 Dundas Street West
Belleville, Ontario
K8P 1B2

Centre Jules-Léger
Faculty of Education
University of Ottawa
200 Wilbrod Street
Ottawa, Ontario
K1N 6N5

Several resource agencies and support groups provide information and support to the parents and teachers of deaf and hard-of-hearing children. The following are some of these organizations:

Alexander Graham Bell Association for the Deaf
3417 Volta Place N.W.
Washington, D.C. 20007

Association of Canadian Educators of the Hearing Impaired
(ACEHI)/Ontario Educators for the Hearing Impaired (OEHI)
c/o Ernest C. Drury School
255 Ontario Street South
Milton, Ontario
L9T 2M5

Auditory-Verbal Therapy Program
North York General Hospital
4001 Leslie Street
Willowdale, Ontario
M2K 1E1

Canadian Council for Exceptional Children
1020 Bayridge Drive
Kingston, Ontario
K7P 2S2

Canadian Hearing Society
271 Spadina Road
Toronto, Ontario
M5R 2V3

Metro Toronto Parents for Total Communication
160 John Street
5th Floor
Toronto, Ontario
M5V 2X8

Ministry of Colleges and Universities
Mowat Block
900 Bay Street
Toronto, Ontario
M7A 1L2

Ontario Association of the Deaf
271 Spadina Road
Toronto, Ontario
M5R 2V3

Voice for Hearing Impaired Children
360 Bloor Street West
Suite-412
Toronto, Ontario
M5S 1X1

Language Development

Language and Learning

Language development is crucial to the social and educational well-being of all students. While it is basic to communication, language is also our primary means of learning. We use it to sort and categorize reality, thereby creating a framework for understanding our experiences. Thus language is essential to the cognitive process.

Children need to use a language constantly in order to both understand their world and gain knowledge of the language itself. In a good learning environment both processes take place simultaneously and naturally. In the process the child increasingly gains control of the environment, develops status as an individual, becomes independent, and develops a feeling of self-esteem. However, a loss of hearing may severely disrupt this natural acquisition of language capabilities.

By the age of five most children have learned the main structural features of their native language and have acquired a considerable working vocabulary simply by using the language every day. With the new concepts and contexts of the school environment their vocabulary expands rapidly. Their language development is a product of their interaction with more experienced users of language, such as teachers and older children, and it is intensified by the schools' language arts programs. It is also enhanced by the stories and poems they read or have read to them.

A loss of hearing interrupts the student's acquisition of receptive and expressive linguistic skills. For this reason deaf and hard-of-hearing children must listen, speak, read, and write constantly. At the Primary and Junior levels especially they must be provided with opportunities to see, hear, and experience language through field trips, the printed word, and language-experience activities.

Deaf and hard-of-hearing students often require many repetitions and much practice with vocabulary and language concepts. As a result their teachers must play an active role in structuring the verbal environment for them. However, speech-language pathologists and itinerant teachers of the deaf and hard of hearing are available to offer assistance and support to classroom teachers.

Further information can be obtained from the Ministry of Education's *Review of Ontario Education Programs for Deaf and Hard-of-Hearing Students* (Toronto: Program Implementation and Review Branch, Ministry of Education, Ontario, 1989).

Optional Methods of Communication

Every deaf or hard-of-hearing student should have the opportunity to develop fluent communication skills. However, there are several alternative methods that might be adopted. The decision on which method is best for a specific child should be made by the student's parents in consultation with professionals.

The following five methods are widely used with deaf and hard-of-hearing students:

- *auditory/verbal*. The student is taught to process sounds and develop speech and language, using whatever residual hearing he or she has.
- *auditory/oral*. This method depends on visual and auditory information. The child is encouraged to watch the face of the speaker and to use speechreading (lip reading) as an aid to understanding spoken language.
- *total communication*. This method incorporates sign language with aural-oral methods of communication.
- *visible English*. This method uses a manual alphabet and speech simultaneously. The Rochester Method is one approach to visible English.
- *cued speech*. Hand shapes are used in combination with speech to help the student speechread.

Deaf and hard-of-hearing students may communicate primarily by using an ideographic language system. The following two systems are commonly used:

- *American Sign Language (ASL)*. American Sign Language is the native language of many Anglophone deaf people in Canada and the United States.
- *Langue des signes québécois (LSQ)*. The langue des signes québécois is the native language of many Francophone deaf people in Canada.

A Note on Pragmatics

Pragmatics deals with the ways language is used in different situations for varying purposes. It encompasses the rules of conversation or discourse and the appropriate use of language in social situations. Both speakers and signers must learn to organize their conversations to make them coherent. They must learn how to initiate, enter, maintain, and terminate conversations; to take turns; to respond appropriately; and to tell a cohesive narrative. They must also become aware of the different registers of language that are used with staff, students, and others. Classroom teachers should incorporate pragmatics in their language programs and thereby increase the social competence of their deaf and hard-of-hearing students.

Strategies for Developing Speaking and Listening Skills

The spoken language of deaf and hard-of-hearing students varies widely in its intelligibility. These students require ongoing support if they are to develop, refine, and maintain functional speech. Often the services of a speech-language pathologist, an itinerant teacher of the deaf and hard of hearing, or other resource personnel will be necessary to reach these goals.

Listening comprehension does not necessarily accompany the wearing of a hearing aid. Many students will need some training if they are to develop their residual hearing to the fullest. Often this will involve monitoring their understanding of what is taking place in the classroom. The following strategies will help teachers reach this goal:

- Ensure that students' hearing aids and FM systems are functioning properly.
- Deaf and hard-of-hearing students often nod or say yes to indicate their understanding of something they may not have understood. Question them regularly (e.g., during a lesson, when giving instructions) to determine their level of understanding.
- When giving instructions, ask students questions relating to, for example, what page is to be read, how many questions are to be answered, or what is to be done when the assignment is finished.
- A rising intonation by itself used as a question (e.g., "Your homework is finished?") is often confusing for a deaf or hard-of-hearing student. Instead, use direct questions beginning with interrogatives (e.g., "Did you finish your homework?"), especially with young children. The use of intonation should be introduced, explained, and practised as needed.
- Language moves quickly for deaf and hard-of-hearing students in the regular classroom. They must be taught to recognize and act on the fact that they may not have fully understood what was presented. Teach them to ask for a review or clarification of what has taken place when they are unsure. This will become a lifelong coping strategy for many deaf and hard-of-hearing students.
- A great deal of information is gained through non-verbal signals that reinforce a verbal message. Use such cues as gestures, facial expressions, strong intonation, pointing, showing, demonstrating, and mime.
- Make it easier for deaf and hard-of-hearing students to comprehend by employing good stress and pause patterns (be expressive), building language learning on direct experience and observation, using direct statements rather than indirect statements, and relating information to past experiences.
- Repeat and reinforce ideas as much as possible.
- High-frequency sounds (e.g., /s/, /sh/, /th/, /f/, /ch/, /t/) can be difficult to hear and thus are typically omitted by deaf and hard-of-hearing students. Emphasize these sounds, slightly lengthened, and include them in tutorials and direct instruction.

- Cover all topics thoroughly in class, keeping in mind that the deaf or hard-of-hearing student may not have the background or specific vocabulary required to grasp concepts that other students have.
- Take advantage of the peer support provided by student notetakers, scribes, tutors, and buddies. (See the section entitled “Support Services: The Co-operative Process” on pages 18-23.)

Strategies for Developing Language Skills

Teachers can use the following strategies to develop language skills with deaf and hard-of-hearing students:

- Make use of journals and daily diaries. They are an excellent means of communication and language development.
- Deaf and hard-of-hearing students often limit themselves to generic words and known phrases. Encourage them to expand the complexity of the vocabulary and language they use.
- Take time to talk to the deaf or hard-of-hearing student each day on a one-to-one basis. This is the best way to recognize problems and devise ways to support him or her.
- Use questions regularly to extend, clarify, and reinforce concepts and vocabulary. Formulate questions that require thought (e.g., “How do you know . . . ?”) and ask students to demonstrate their understanding of what has taken place.

There is often a need to stimulate language development directly with young deaf and hard-of-hearing students. In such cases it is essential to respond to students’ statements by acknowledging their message and then prompting further language use. Teachers can use the following strategies:

- Repeat the main idea or key word and add a social comment, for example, “Oh, you saw the pandas. That’s exciting!”
- Ask for further information by incorporating the main idea in the response, for example, “You saw the pandas. What were they doing?”
- Share a similar experience in the response, for example, “I saw the pandas too. They were bigger than the brown bears.”
- Nod and repeat the student’s idea with an intonational or facial invitation for the student to continue, for example, “The real pandas were there!”

Strategies for Building Vocabulary

A loss of hearing can interfere with many of the experiences that lead to the acquisition of basic vocabulary. For example, daily conversation, incidental learning, and the overhearing of conversations and radio or television broadcasts all contribute greatly to the growth of vocabulary and the understanding of the expanded meaning of words. The fact that a student with a hearing loss is cut off from these many opportunities to develop vocabulary spontaneously has a direct effect on the student's success in all school subjects. For this reason most deaf and hard-of-hearing students require specific and direct instruction in vocabulary building.

The following strategies can be used to develop vocabulary with deaf and hard-of-hearing students:

- Be alert for opportunities to build and reinforce vocabulary as they arise. In this way vocabulary can be taught in as natural a context as possible.
- Emphasize key words by saying them a little more slowly and a little more loudly and by noting them on the chalkboard.
- Although the names of people and places are often familiar to deaf and hard-of-hearing students, explain and highlight proper names to avoid confusion.
- Teach idiomatic expressions and reinforce them when the appropriate situation arises.
- Use concrete materials, pictures, books, and first-hand experiences to develop vocabulary in an immediate and meaningful context.

A speech-language pathologist will be able to make additional suggestions for vocabulary development.

Strategies for Assisting Deaf and Hard-of-Hearing Students

Introduction

Many of the strategies outlined in the previous section on language development can also be used to help deaf and hard-of-hearing students with other parts of the curriculum. In some cases modifications to teaching methods or classroom organization will be appropriate. This section examines some of these modifications, as well as strategies that are specific to the subjects of the secondary school curriculum.

Teaching Modifications

Teachers will find the following strategies useful:

- Support oral instruction with print or visual aids whenever possible.
- Check the student's comprehension of instructions and new material from time to time throughout a lesson. Rephrase questions or instructions as necessary.
- Repeat the answers given by students seated behind the deaf or hard-of-hearing student.
- State the topic at the outset of a discussion and let the student know when the topic changes.
- Whenever possible, provide the deaf or hard-of-hearing student with an outline of a new topic (including vocabulary lists) before its introduction. The student will find such background information helpful.
- Provide parents with relevant information so that they can plan follow-up activities at home.
- When deaf and hard-of-hearing students do not have the background experience to understand material presented in class, plan for prereading, previewing, or other activities to establish a context for the new learning. Fact sheets covering the main ideas or new concepts can be offered to resource staff or to parents in advance of the classroom discussion so that they can prepare students.
- Adapt the teaching style to accommodate the learning style (e.g., visual, auditory, kinesthetic-tactile) of the student.

Much important information comes from the learners themselves in most classrooms, and it is important that the deaf or hard-of-hearing student have access to such information. The following strategies will facilitate this:

- Establish predictable routines so that the deaf or hard-of-hearing student knows what is happening and what should happen next.
- Promote tolerance of others by expecting students to listen to the ideas of others and to wait for their turn to interact.
- Teach deaf and hard-of-hearing students to ask for clarification, to express their opinions, and to contribute to discussions.

A Note on Speechreading

Speechreading is the act of deducing what has been said by watching a speaker's lip movements, body language, facial expressions, and gestures. However, the individual can rarely deduce a complete message solely by speechreading, because many sounds are not visible on the lips and many different sounds appear exactly the same.

While some deaf and hard-of-hearing students speechread quite well, others do not benefit significantly from speechreading. To a large extent speechreading depends on language competence: a more competent language user will be better able to fill in the gaps not discernible through speechreading.

The following guidelines will facilitate speechreading:

- The deaf or hard-of-hearing student should be within 1-3 m of the speaker.
- The speaker should gain the deaf or hard-of-hearing student's attention before speaking.
- The speaker should stand still in front of the student, articulate clearly, and speak at a moderate speed, but without exaggeration.
- The student should have a clear view of the speaker's face. Speakers should not stand with their backs to the light.
- Speakers should not talk while their backs are turned to the student or while writing on the chalkboard.
- Deaf and hard-of-hearing students should be permitted to turn around to see classmates as they talk or answer questions. They should be encouraged to move when they need a better position to speechread.
- The speaker should use an overhead projector so that he or she can face the student while providing a written visual outline of key points.
- The speaker and the student should be at the same eye level.
- Small-group learning will facilitate speechreading.

Examinations

Examinations, especially those containing essay questions, are one of the most difficult aspects of school for deaf and hard-of-hearing students. Teachers can use the following strategies to ease students' experiences in this area:

- Provide deaf and hard-of-hearing students with more time to complete the examination. This can reduce a great deal of pressure on those who may be struggling with language as well as content.
- Ask students to read over the examination questions and to circle words that are unfamiliar. If the question can be reworded or rephrased without giving them an unfair advantage, that should be done. Perhaps an oral clarification will suffice.
- Teach the language of examination questions before giving examinations. Words such as *compare*, *define*, *discuss*, and *describe* may be confusing to deaf and hard-of-hearing students. Terms such as *trace*, *identify*, and *relate* are used on written tests but are less commonly a part of discussions.
- All information about examinations should be presented in written form and brought to the attention of deaf and hard-of-hearing students.
- Check to see that students are studying the right information. Discuss how to prepare for tests and examinations with the entire class. Some students may require direct instruction on study skills. Note that it is preferable to assign and test work in small units.
- Review test results to locate specific areas requiring attention.
- Missing incidental conversation can place deaf and hard-of-hearing students at a disadvantage. Attempt to explain or clarify all important situations and conversations to students.

Subject-Specific Strategies

When students reach the Intermediate Division, rotary classes increase, forcing them to adjust to different teachers and teaching styles. The variety of speakers necessitates adjustments in speechreading for deaf and hard-of-hearing students. Difficulties also arise from the fact that most of the instruction now takes place orally, the most difficult mode for deaf and hard-of-hearing students. This section examines considerations and strategies related to specific subject disciplines.

Composition. Deaf and hard-of-hearing students frequently require direction in preparing an outline of information prior to writing. They also benefit from the opportunity to discuss their ideas before starting their outline or the writing itself. Since abstract concepts and a lack of precise vocabulary could interfere with students' writing, the discussion should include some assistance with vocabulary.

Organization and the sequencing of ideas may be a key area for support. Students should be asked to hand in their point-form summaries with the completed writing assignment. They can be used as one indication of where support is required.

History. The deaf or hard-of-hearing student's difficulty with history is usually a function of the subject's large volume of specialized vocabulary. Abstract concepts (e.g., communism, feudalism, socialism) may be entirely new to the deaf or hard-of-hearing student, while other students may have at least heard them mentioned before.

The complex wording of textbooks and examinations can also be difficult for these students. Accounts and texts with less complex vocabulary should be provided for students' reference, and students should be encouraged to develop their own glossary of terms. Students should also be provided with an outline of the course and a textbook before the course actually begins; this will give them a better chance of keeping up with their peers. Study and review sheets that include sample test questions and a complete set of notes will also be beneficial.

Music. Some deaf and hard-of-hearing students gain great pleasure from both vocal and instrumental music. Their ability to hear and appreciate music is largely dependent on their type and degree of hearing loss. For this reason both students and teachers should examine carefully the requirements of any music course being considered.

Although participation in vocal music is frequently considered to be inappropriate for deaf and hard-of-hearing students, it can in fact become an enjoyable part of their school program, as well as providing them with clearer articulation, improved breath control, and a better variation of pitch and intensity. While it is unrealistic to expect deaf and hard-of-hearing students to become solo performers, their participation in a school choir may be possible and may help them develop a feeling of self-esteem. Instrumental music may also be considered for deaf and hard-of-hearing students if a suitable instrument is chosen.

Literature. Shakespearean plays or similar literature are difficult for deaf and hard-of-hearing students. In the case of a play, a brief synopsis of segments of the play can be given to students as it is studied to facilitate their comprehension. Reference can be made to the original text for details.

If students find it difficult to keep up with classroom reading assignments, they may require extra time and some tutorial support. These students usually continue to have difficulty with language throughout their secondary school years, and all related subjects should be monitored.

Computer studies. Computer courses involve writing programs that become increasingly more complex and may be beyond the level of deaf and hard-of-hearing students unless individual help is available. A review of course content, each student's competence with language, and past performance in this area of study is required to determine the appropriateness of each computer course.

Second-language courses. Some deaf and hard-of-hearing students achieve success in studying a second language. However, learning a second language is not recommended for students experiencing serious difficulties with English.

Physical education. It is not always feasible for hearing aids to be worn in the more active events in physical education classes. Injury to the student or damage to the hearing aid may result.

Deaf and hard-of-hearing students may be unable to hear whistles during team sports and may require compensatory visual cues. They could also be advised to continue playing until it is obvious that the play has stopped.

Guidance (timetables). All students require careful guidance to ensure that they choose their subjects realistically. Deaf and hard-of-hearing students might require a reduced timetable or a partially integrated program, a notetaker, and other learning support systems.

Technical studies. Many shops are noisy environments and not conducive to good listening. It is important that instructions be clearly outlined and new information summarized and supported by a written account. Demonstration is the best teaching strategy.

Assessment and Evaluation

Student Profiles

One significant goal in assessing students is to achieve a profile of their accomplishments over time. For deaf and hard-of-hearing students it is important that the assessment acknowledge the total learning process. Thus the profiles for deaf and hard-of-hearing students should reflect both the process and the product of their programs and should include both observational and measurement data. An emphasis should be placed on daily work in which patterns that evolve over a few weeks or months demonstrate a student's strengths, needs, and rate of progress.

The following methods are well suited to the ongoing assessment and evaluation of deaf and hard-of-hearing students:

- *conferences*. Regular teacher-student conferences that involve the discussion of daily progress, difficulties that students may have, and provisions for the development of required concepts and skills are crucial to learning because they provide input from the student.
- *non-verbal assignments*. For some students non-verbal assignments (e.g., projects, the construction of models, collections) are constructive alternatives to written tests.
- *individualized techniques*. Student-observation checklists, interest inventories, anecdotal records, and response reading or text reconstruction (the retelling of a story) are useful means of gathering data for the purposes of assessment.
- *work samples*. Writing folders, book lists, reading logs, journals and diaries, student-published books, and videotapes all reflect students' growth over time.
- *self-evaluation*. Deaf and hard-of-hearing students benefit from self-evaluation in which a positive focus is prominent (e.g., "Things I Have Learned").
- *formal assessment*. Formal assessments may be made by various members of a multidisciplinary team. Further information on this form of assessment may be found in *A Manual of Assessment Instruments Suitable for Hearing-Impaired Students* (Toronto: Ministry of Education, Ontario, 1988).

Potential Difficulties

While the assessment strategies commonly used by classroom teachers may not differ greatly for the deaf or hard-of-hearing learner, they might pose some difficulties for the student. Teachers and resource personnel should be aware of the following possibilities:

- Because the deaf or hard-of-hearing student's background experience and concepts (and his or her corresponding language development) may be incomplete when compared to many hearing peers, it may be necessary to use alternative forms of testing.
- The vocabulary and sentence structure used for test instructions, questions, directions, and information about assignments may be (a) unfamiliar to the deaf or hard-of-hearing student or (b) missed aurally.
- Tests requiring complex verbal instructions and some verbal responses may place the deaf or hard-of-hearing student at a disadvantage, because he or she may lack the range of vocabulary needed to express or understand abstract concepts, which are usually learned through language.
- Oral reading tests may be unfair to deaf and hard-of-hearing readers because of the difficulties these students may face with articulation, voice inflection, syllabication, unfamiliar vocabulary, and other aspects of reading.
- A slower rate of language acquisition and a less sophisticated use of language can be a normal result of hearing loss and should not be allowed to confuse evaluation and assessment results. No judgement should be made about cognitive abilities based on a deaf or hard-of-hearing student's language skills, auditory discrimination, or other skills related to hearing.

Assessment and Evaluation Strategies

While there is as wide a variety of skills and abilities among deaf and hard-of-hearing students as there is in the general population, all students can benefit from strategies designed to cope with assessment situations. A few deaf and hard-of-hearing learners will develop such strategies spontaneously, but generally these techniques will have to be taught directly through demonstration and the use of many examples. Teachers should ensure that their students:

- are confident about asking for the clarification of information that they do not fully understand;
- can plan their test time according to the number of marks assigned to each question;
- know when to skip troublesome items on a test for the time being;
- are able to jot down notes on scrap paper before writing their final answers;
- can eliminate obviously wrong choices on a test to narrow the range of possible options;
- will take risks and employ appropriate guessing strategies;

- learn to identify quickly the task, the problem, or what is required; and
- proofread their answers to avoid careless errors in spelling, sentence structure, and grammar.

While there are many approaches to evaluation, most of the modifications recommended for deaf and hard-of-hearing learners can be readily applied to existing models. The following strategies have been used successfully in this area:

- Most of the time deaf and hard-of-hearing learners invest more time and effort in projects than do hearing students to accomplish the same results. Consider the extending of time limits to allow students to decipher more closely the language and vocabulary involved in tests, projects, and other assessment instruments.
- Check to ensure that students are familiar with the format of tests, assignments, and projects, as well as with their content material. It is important that they thoroughly understand what is required and how to proceed.
- Use clear, concise instructions, accompanied by graphic visual materials. Consider using such other reinforcing strategies as demonstrations, examples, gestures, and follow-up material.
- Deaf and hard-of-hearing students often find isolated details and concepts difficult, since they tend to rely on repetition, prediction, and confirmation in order to learn. Improve their chances of success by ensuring that assessment instruments contain ample contextual and situational clues, as well as multisensory information.
- Allocate time to discuss with students the purpose, organization, expectations, references, and marking schemes of assessment techniques or activities.
- Have students work in small groups, on group projects, and in other forms of partnership learning so that they can take advantage of the abilities of others while at the same time developing social skills.
- Allow students to apply what they have learned, rather than simply being tested on their retention of information.
- Deaf and hard-of-hearing students may be familiar with the information being tested but be unable to decipher the language of the question. They might also find words such as *compare*, *contrast*, *define*, and *justify* confusing. When they experience such difficulties, help them interpret questions or directions.
- While the benefits received from sound-amplification equipment vary with the individual, the hearing of amplified speech sounds is always difficult. In preparation for assessment activities (especially those involved in formal assessment), check students' equipment carefully to ensure that it is in excellent working order.

Equipment for Deaf and Hard-of-Hearing Students

Hearing Aids

Most deaf and hard-of-hearing students will make use of hearing aids. However, hearing aids merely amplify sound; they do not correct a hearing loss or the associated distortion of sound. Although they are fitted to compensate for an individual's particular loss, they do not provide a deaf or hard-of-hearing person with normal hearing. They simply allow the individual to make better use of residual hearing. Thus teachers should never assume that because a student wears a hearing aid, he or she can hear and understand all speech and language.

Hearing aids have definite limitations. In a noisy environment they amplify all sound (speech and noise), and as the distance from the sound source increases, it becomes more difficult for the wearer of the hearing aid to separate the signal from the background noise. There are also limitations to the amount of amplification that a hearing aid can produce without distortion. In general, the degree of benefit derived by the user of a hearing aid is often a function of the type and configuration of the individual's loss. For example, if an individual has no usable hearing in a given frequency, then even greatly amplifying that frequency may not help.

Hearing aids for educational purposes fall into two broad categories – personal hearing aids and FM systems.

Personal hearing aids. The most common personal hearing aid is the behind-the-ear aid. This type of aid is situated behind the individual's ear and can be used with hearing losses ranging from mild to profound. Other types of personal aids, for example, in-the-ear aids, may be fitted for specific reasons.

Figure 4: Behind-the-ear aid

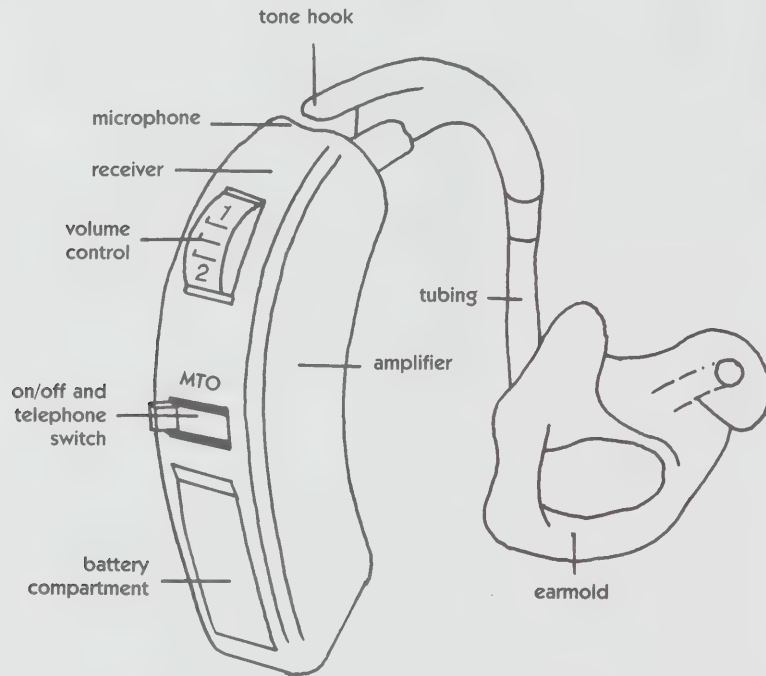
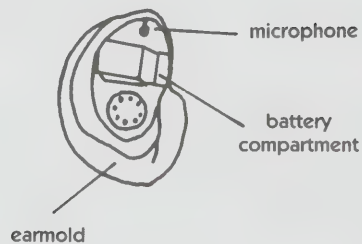


Figure 5: In-the-ear aid



FM systems. FM systems are designed to compensate for noise, distance, and reverberation in classroom settings. The FM system has two main components, one worn by the teacher (an FM transmitter) and one worn by the student (an FM receiver). The teacher's unit transmits the signal (the teacher's voice) to the student's receiver, where it is amplified or sent to the student's personal hearing aid to be amplified. Although the student and the teacher may move anywhere within the confines of the transmitter's range, a wireless link is established between them so that the teacher is perceived as being within a constant 10-15 cm of the student's personal hearing aid. Thus the effects of noise, distance, and reverberation are greatly reduced. The transmitter may be capable of transmitting as far as 45 m and can be used virtually anywhere, in the classroom, in an auditorium, or outdoors.

The teacher must bear in mind that although the use of an FM system does improve listening conditions, it does not completely correct a hearing problem. The provision of the FM system does not restore the student's hearing and does not lessen the teacher's responsibility to treat the individual as exceptional. However, there are few other remedial measures used with deaf and hard-of-hearing students that pay greater and more immediate dividends where group and distance listening are essential components of the classroom program.

The following are some typical questions that teachers ask about FM systems:

Questions	Answers
<i>Will the FM system change my voice for the other students in the classroom?</i>	No. It will amplify your voice only for the student wearing the corresponding receiver.
<i>Will my microphone ever squeal as PA systems frequently do?</i>	Squealing is caused by feedback. FM systems are designed so that feedback will not occur.
<i>Is there a possibility that I could get a shock from this equipment?</i>	No. There is no danger of getting a shock from FM systems.
<i>How far should the microphone be from my mouth?</i>	Ideally, the microphone should be positioned approximately 14 cm from the speaker's mouth.

Questions	Answers
<i>How close do I have to be for the student to hear?</i>	An FM system will usually transmit a distinct signal for a distance of 45 m. While this distance may be useful in an auditorium or on a class trip, it must be remembered that many students need to have a clear view of the speaker's face for the added support and benefit of speechreading.
<i>Will wearing this equipment mean that the student will hear and understand everything I say?</i>	This varies from student to student based on the individual's residual hearing. Most students will be able to understand some portion of what you say, but it should be emphasized that some students rely on speechreading and other visual strategies to support the auditory message.
<i>Will yelling or loud noises cause damage to the student's ears?</i>	FM systems are designed with a safety feature that prevents the amplification of loud noises to the extent that they will cause damage or pain to a student's ear.
<i>Can the FM system be carried from room to room?</i>	The equipment is completely portable and should be used on rotary, in assemblies, and on class trips.
<i>Who will check to see that this system is working satisfactorily?</i>	This varies in each school board. It is very important to know who is responsible for checking FM units. A regular, consistent procedure for checking these systems should be established, and any malfunctions should be reported to the person in charge so that repairs can be made immediately. The availability of systems that can be loaned to students in need is vital. Regular performance assessments and calibrations are necessary to ensure that these systems are in top working condition.

Managing personal hearing aids and FM equipment. One of the most challenging situations facing the classroom teacher is to ensure that deaf and hard-of-hearing students understand and are understood by the teacher and the other students. The following guidelines for the management of hearing aids and FM equipment may help ensure that deaf and hard-of-hearing students receive appropriate amplification at all times:

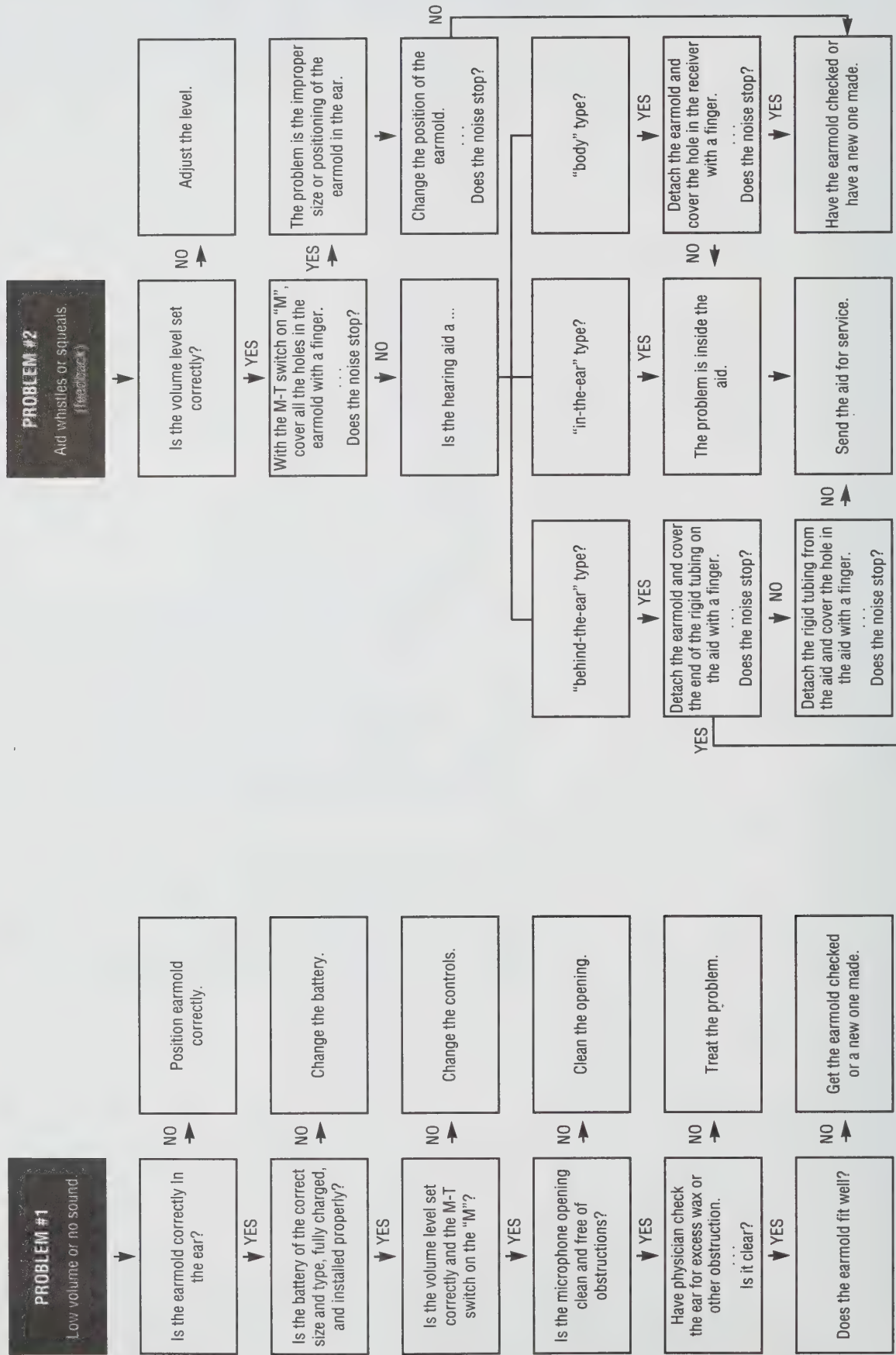
- Check daily to ensure that hearing aids and FM equipment are working.
- Have replacement batteries available.
- Ensure that FM systems are available for loan to students who require them.
- Have the speaker wear the FM transmitter approximately 14 cm from the mouth.
- During classroom discussions, pass the transmitter to the student who is speaking.
- Indicate the student who is about to speak and ask that individual to wait until the deaf or hard-of-hearing student has made eye contact.
- Ensure that assembly speakers wear a transmitter or use an overhead projector.
- Have written instructions for the use and charging of FM equipment available for supply teachers.
- Encourage the deaf or hard-of-hearing student to take responsibility for the daily charging of FM equipment as appropriate.

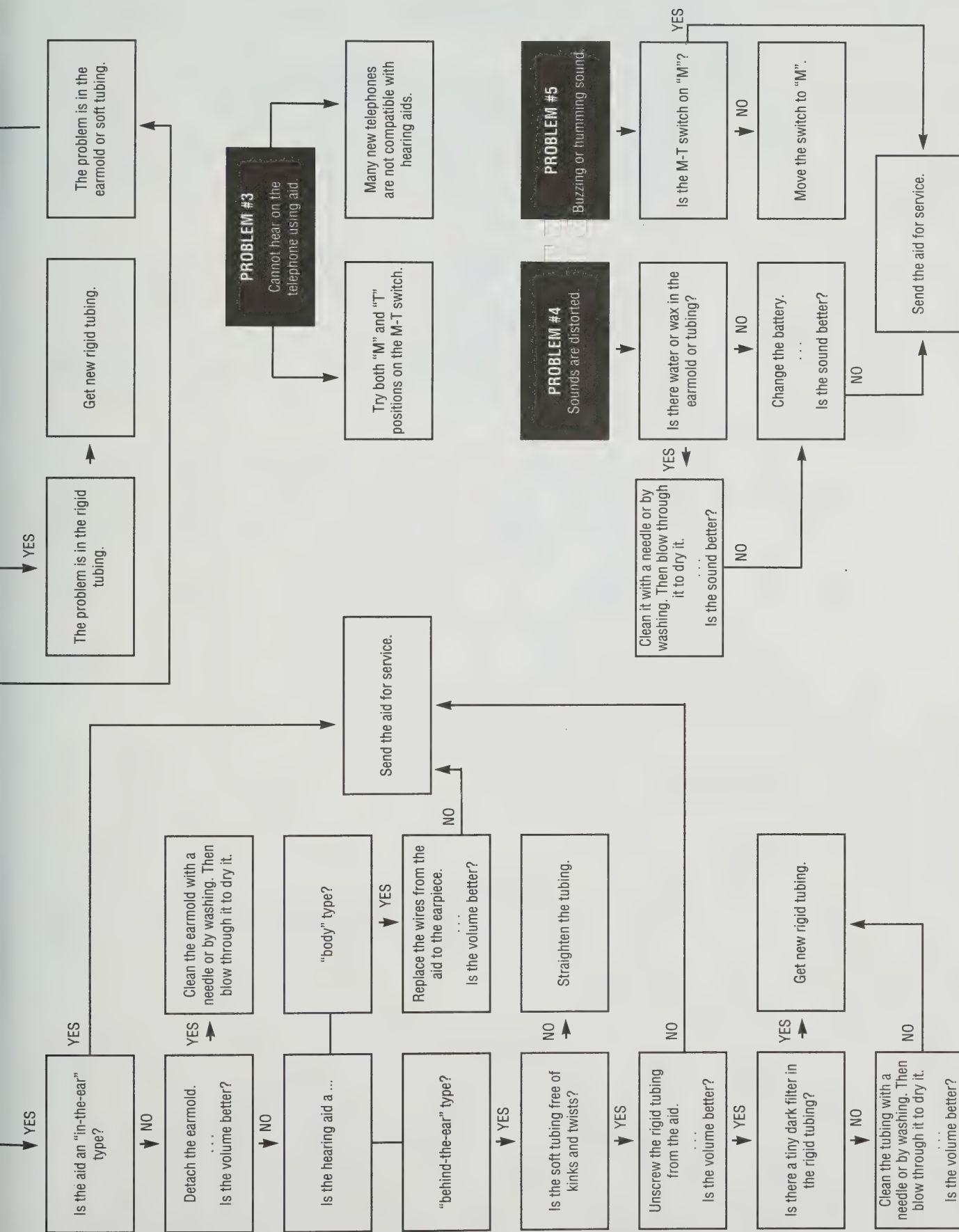
Like most sophisticated electronic devices, hearing-aid systems are subject to malfunctions. In order to identify malfunctions and take steps to repair the systems as quickly as possible, teachers or reliable older hearing students should conduct daily listening checks. Deaf and hard-of-hearing students should also be encouraged to report malfunctions, dead batteries, broken components, and other problems.

Resource personnel from the local board office (e.g., teacher of the deaf and hard of hearing, educational audiologist) or from a Provincial School should be called on to explain and demonstrate the use of hearing aids and FM systems. This demonstration should include information on how to do a subjective listening check and simple troubleshooting techniques. (See figure 6 on pages 42-43.)

Figure 6: Troubleshooting hearing aids

Five Common Problems





Adaptations to Audio-Visual Equipment

Most audio-visual equipment can be used as effective teaching aids for deaf and hard-of-hearing students. However, some minor adaptations may be necessary.

Any audio-visual equipment that necessitates darkening the room (e.g., movies or opaque projectors) will have an impact on the deaf or hard-of-hearing student's ability to speechread. Thus explanations given while the lights are out will have to be repeated later. Deaf and hard-of-hearing students who find movies and videos difficult to follow can also benefit from having a teacher-prepared outline prior to the viewing.

It is a good idea to use audio-input patch cords when such equipment as tape recorders, film projectors, and VCRs is used in conjunction with FM systems. These cords make a direct connection between the FM transmitter and the piece of equipment in use. By making this direct connection, the background noise caused by the machine's motor can be eliminated. For further information regarding audio-input patch cords, contact the appropriate resource personnel or the student's audiologist.

The overhead projector can be an excellent visual aid for deaf and hard-of-hearing students, because the lights may be left on and the teacher usually faces the class, thus allowing students the opportunity to speechread. Since such projectors can be very noisy, however, students should sit from 2-3 m away from the fan motor.

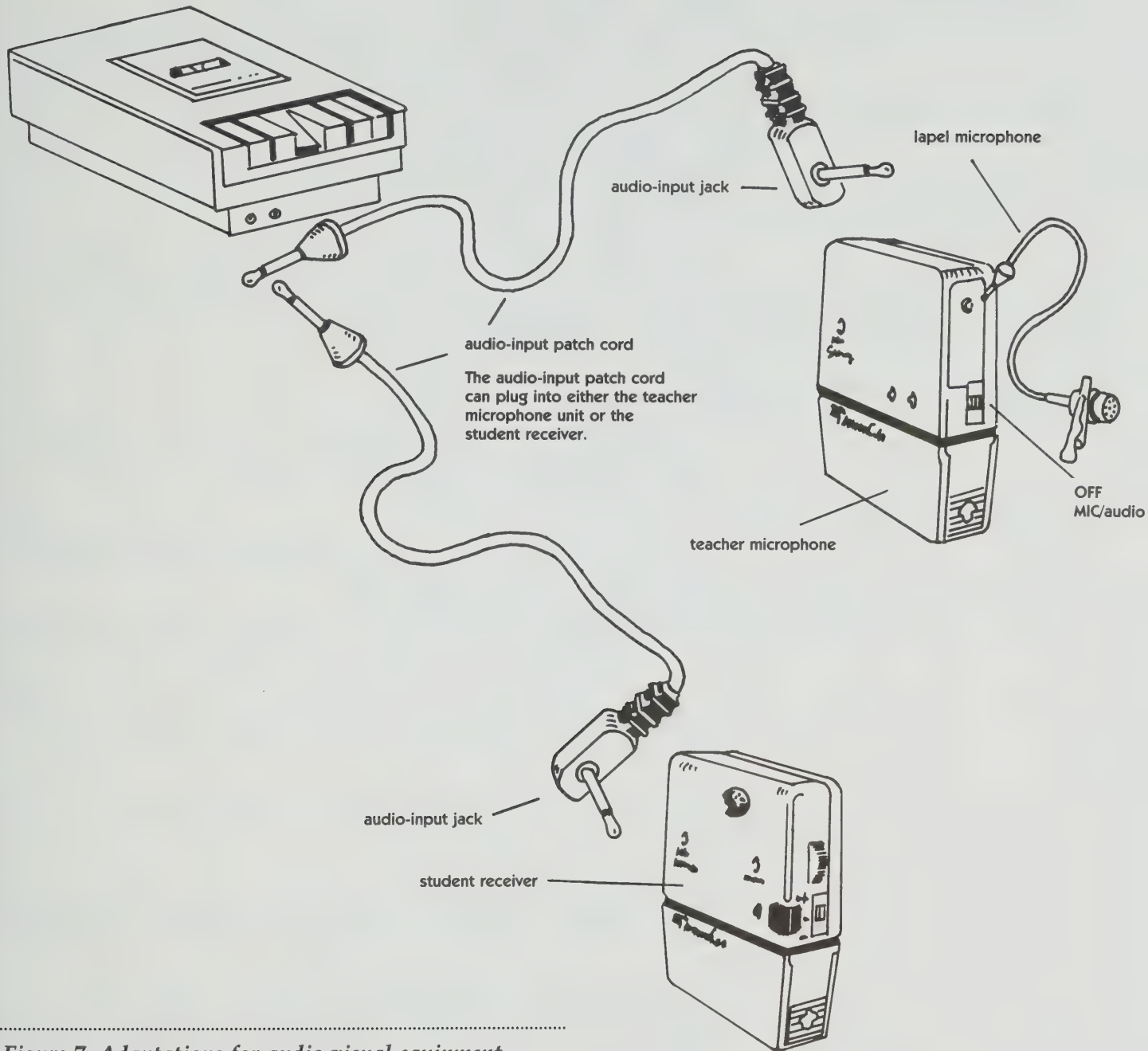


Figure 7: Adaptations for audio-visual equipment. FM users can attach an audio-input patch cord from their FM receivers directly into such equipment.

Assistive Devices

There are many technical aids that can be beneficial to deaf and hard-of-hearing students. Advice on which ones to use can be obtained from an audiologist. The devices themselves can be purchased from a hearing-aid dispenser. The following are some of these devices.

Alarms and Alerting Equipment

- *Flashing lights* visually alert a person when, for example, the telephone or doorbell is ringing.
- *Portable alarm units* cause a light to flash in response to certain sounds (e.g., a baby crying, a knock on a door, a fire alarm in a hotel).
- *Special alarm clocks* wake a deaf or hard-of-hearing individual by flashing a light or setting off a vibrator under the individual's pillow.

Telephone Devices

- *A volume control handset*, which consists of a wheel or a switch on a telephone handset, is used to increase the volume in a telephone earpiece. (Some pay telephones are now equipped with such handsets.)
- *A portable telephone amplifier* is a battery-powered "hockey-puck" that slips onto the telephone earpiece to increase the volume. (It will not work on many new telephones.)
- *A Telecommunication Device for the Deaf (TDD)* is an electronic teletype that can communicate with a similar device via telephone lines (typed messages appear on a screen or a printer).
- *The Bell Relay Service (BRS)* allows a TDD to communicate with a Bell operator in order to contact a person who does not have a TDD (or the reverse).

For more information on a TDD, contact the Telecommunications Centre for Special Needs at 1-800-268-9243.

Hearing-Aid Accessories

- *Direct audio input* allows some hearing aids to be attached by a special cord to a remote microphone, a television, or some other audio source.
- *Hearing-aid retainers* are practical methods for keeping hearing aids from falling off while one is participating in sports or play.
 - (a) Huggie aids are clear plastic retainers that provide security for children by preventing damage if a hearing aid is dropped and by preventing the child from tampering with the device's controls.
 - (b) Oval double-back adhesive pads are used to hold behind-the-ear aids firmly in place.

Radio and Television Devices

- *Telecaption decoders* produce printed subtitles across the bottom of a television screen for those programs marked "CC" (closed caption) in television listings.
- *TV-band radios* can be tuned to receive the sound from various television channels at a higher volume (via a headset) than others receive it at the same time from the television set.

- *Headset wired to television (or radio).* The addition of a small resistor to a television speaker can produce a high volume in a headset while other viewers receive the normal volume.

Ear Hygiene Products

- *An air blower* removes moisture and foreign matter from earmolds and tubing after cleaning. It eliminates the build-up of perspiration inside tubing during humid weather.
- *Earmold disinfectant* is an antibacterial instant earmold cleaner and deodorizer. It is sprayed directly on the earmold, which is then wiped dry with a tissue.
- *Dri-aid kit.* Dampness, humidity, and moisture can shorten battery life, cause erosion, and affect the sensitive microphone and receiver of the hearing aid. A dri-aid kit removes the daily accumulation of moisture in the hearing aid, earmold, and tubing. Each kit contains a heavy-duty sealable pouch and a container of silica gel. The hearing aid is placed in the pouch with the gel at night, and moisture is absorbed during the night.

Miscellaneous Equipment

- *Battery testers* are available for testing the button cell batteries used in hearing aids. The testers are equipped with either an indicator light or a dial.
- *Listening tubes* or stethoscopes are available so that parents can perform listening checks on their children's hearing aids.

Glossary

acoustic feedback The result of amplified sound leaking from a receiver or an earmold back to a microphone, where it is reamplified, causing a whistling or high-pitched sound.

adventitious hearing loss A loss that occurs after birth (as opposed to a prenatal hearing loss).

ambient noise Background noise.

amplification A magnification or increase in the intensity of sound.

assistive devices Technical aids for the deaf and hard of hearing (see pages 46-47).

audiogram A graph that indicates a person's hearing sensitivity. The quietest level at which an individual hears at designated frequencies is plotted on an audiogram.

audiologist An individual qualified to test hearing and make recommendations concerning the use of hearing aids and remedial programs.

audiometer An electronic instrument used to measure hearing.

audiometry The measurement of hearing. See also *impedance audiometry*, *pure-tone audiometry*, and *speech audiometry* for specific types of measurement.

auditory discrimination The ability to differentiate one sound (or a series of sounds) from another.

auditory learning (traditionally termed *auditory training*) The specific and environmental resources used to maximize the utilization of residual hearing.

auditory memory The perception, storage, and recall of both verbal and non-verbal auditory events, such as music, speech, or environmental sounds.

augmentative communication systems Systems that enable students to communicate through pictures, picture and symbol boards, graphs, synthesizers, and computers when speech or motor control restricts the use of verbal and written language.

bilateral Pertaining to the right and left sides (e.g., "bilateral hearing loss").

binaural Pertaining to hearing or listening with both ears.

bone conduction The transmission of vibrations through the bones of the skull to the neural pathways of the inner ear.

Bell Relay Service (BRS) A communication service in which a telephone operator uses the telephone lines to link a deaf person and a hearing person.

conductive hearing loss A hearing loss in which damage or obstruction takes place in the outer or middle ear, inhibiting the transmission of sound to the inner ear. It is most commonly caused by ear infection (otitis media), which is usually medically treatable.

deaf community A separate cultural and linguistic minority.

deafness A hearing loss in which the sense of hearing is dysfunctional for ordinary use in communication, with or without a hearing aid.

decibel (dB) The unit of measurement for the intensity of sound.

earmold The plastic piece designed to couple a hearing aid with the ear canal to provide an acoustic seal against feedback.

electroacoustics Sound production, transmission, or restitution through electrical means.

finger spelling Standardized finger configurations, each representing one letter of the alphabet. It is also termed *manual alphabet*.

frequency The number of times a sound wave vibrates in one second; the unit of frequency is the hertz (Hz).

hard of hearing Hard-of-hearing individuals have sufficient residual hearing (usually with a hearing aid) to use their hearing as the primary modality for communication.

hearing aid Aid that provides some degree of gain (amplification) over a range of frequencies. Hearing aids differ in the amount of gain they provide, in the range of frequencies over which they amplify, in the relative amount of amplification they provide for low- and high-frequency sounds, and in the maximum amount of power they can deliver.

hearing impairment A traditional and generic term indicating a continuum of hearing loss from mild to profound (mild: 26–40 dB; moderate: 41–55 dB; moderately severe: 56–70 dB; severe: 71–90 dB; profound: 91+ dB). The term *hearing impairment* belongs to the medical model of hearing loss; its adjectival form, *hearing impaired*, has been replaced by the terms *hard of hearing* and *deaf*, which do not have a connotation of deficit.

hearing threshold The quietest sound intensity that a person can hear.

hertz (Hz) A synonym for *cycles per second (cps)*, hertz describes or measures the number of vibrations per second (frequency) giving rise to a sound.

impedance audiometry A measurement of the acoustic properties of the middle ear. The graphic representation of impedance is called a *tympanogram*. From the shape of the tympanogram, the audiologist can judge whether there is a problem affecting the middle-ear structures that could cause a conductive hearing loss and, if so, what type of problem it is likely to be.

"in lieu" program A school board program for deaf and hard-of-hearing students funded by the Ministry of Education.

integration The placement of deaf and hard-of-hearing students in regular classrooms.

interpreter Someone who facilitates communication between two or more people who do not share the same language or method of communication.

itinerant teacher A teacher qualified to provide direct instruction and resource information for deaf and hard-of-hearing students and consultation for school personnel and parents.

mastoiditis The presence of diseased tissue in the mastoid bone.

mixed hearing loss A combination of a conductive and a sensorineural loss of hearing.

monaural The use of one ear or the reception of sound through one source.

myringotomy, tympanostomy A surgical procedure in which a small tube is inserted into the tympanic membrane to act temporarily in place of the eustachian tube, allowing ventilation of the middle ear and drainage of fluid.

oral interpreter Facilitates communication for deaf and hard-of-hearing people by providing them with a voiceless rendition of spoken language – through the use of facial expressions, gestures, and natural lip movements – when they are communicating with hearing people.

oralism The philosophy and practice of educating deaf and hard-of-hearing individuals through the development of speech and communication skills; it includes the use of residual hearing, speechreading, and speech, but generally excludes signs or finger spelling.

otitis media A medical condition that results in fluid accumulating in the middle-ear cavity, causing an inflammation of the middle ear and a conductive hearing loss (or in severe cases, a sensorineural loss) in some children.

otosclerosis A disease caused by excessive bony growth around the stirrup footplate in the middle ear, which impedes the vibratory movement of the ossicular chain.

postlingual hearing loss A hearing loss that occurs after language has been acquired.

pragmatics A component of language dealing with the ways language is used in different situations for varying purposes. It encompasses the rules of conversation or discourse. Both speakers and signers must learn to organize their conversations to make them coherent. They must learn how to initiate, enter, maintain, and terminate conversations; to take turns; to respond appropriately; and to tell a cohesive narrative.

prelingual hearing loss A hearing loss that occurs before language is acquired.

pure-tone audiometry A measurement of hearing that uses pure tones at specific frequencies (125–8000 Hz) and at controlled output levels (–10–120 dB).

residual hearing The hearing that an individual possesses relative to a full capacity to hear. Careful consideration of residual hearing is necessary for amplification and remedial purposes.

reverberation The sound caused by the acoustic properties of the surrounding walls, floor, and ceiling.

semantics The component of language that involves meaning. It includes words (vocabulary), parts of words (morphology), sentences, and entire texts.

sensorineural loss A hearing loss whose focus is either in the inner ear (cochlea) or along the eighth cranial (auditory) nerve. It is characterized by a decrease in clarity and loudness and can have many causes, including heredity, noise, injuries, and meningitis and other diseases. It is not medically treatable.

sign language The visual-gestural language used by deaf people. For example, American Sign Language (ASL), used by the Anglophone deaf community in North America, is a complete language, distinct from the structures and rules of English and other languages.

sign-language interpreter An interpreter who accurately renders spoken language to sign language and sign language to spoken language between deaf and hearing people.

sign systems Manual codes designed to represent English visually through a combination of signs and linguistic markers. Sign systems such as Signed English are frequently used in school systems in combination with speech to foster English-language literacy.

speech audiometry The measurement of hearing using speech as the test material.

speech awareness threshold (SAT) The softest level of speech that an individual can detect in a structured listening situation.

speechreading (lip reading) The act of deducing what is being said by watching a speaker's lip movements, body language, facial expressions, and gestures.

speech reception threshold (SRT) The intensity (in decibels) at which a person is able to recognize speech approximately half of the time.

syntax The part of grammar dealing with the arrangement of words to form sentences (sentence structure) and their interrelationship (word order). All languages have a syntactical component.

Telecommunication Device for the Deaf (TDD) A TDD telephone consists of an acoustic coupler, a visual screen, and a keypad. There is a wide variety of these devices.

total communication A philosophy incorporating sign language into aural-oral methods of communication.

tympanostomy See *myringotomy*.

unilateral Pertaining to either the right or the left side (in one ear only).

Annotated Bibliography

Bailes, C.; Searls, S.; Slobodzian, J.; and Staton, J. *It's Your Turn Now!* Washington: Gallaudet University Press, 1986.

Contains information on how to use dialogue journals with deaf students and samples of journal entries.

Bess, Fred H., and McConnell, F. *Audiology, Education and the Hearing Impaired Child*. Toronto: C.V. Mosby, 1981.

Collects and describes key information from the areas of audiology, language, and education.

Bunch, Gary Owen. *The Curriculum and the Hearing-Impaired Student*. Boston: Little, Brown, 1987.

Discusses the problems of curriculum design for deaf and hard-of-hearing students; reviews current curricula for languages, reading, mathematics, science, speech, aural habilitation, and the arts; and discusses mainstreaming and the problems faced by multihandicapped students.

Canada. Health and Welfare Canada. "Awareness Kit on Acquired Hearing Impairment in the Adult". 2nd ed. Ottawa: Minister of Supply and Services Canada, 1989.

Information kit that presents medical and audiological information about hearing disorders in adults. The kit and a report can be ordered by writing to Institutional and Professional Services Division, Health Services Directorate, Health and Welfare Canada, Ottawa, Ontario K1A 1B4.

———. "Childhood Hearing Impairment". Ottawa: Minister of Supply and Services Canada, 1988.

Information kit that presents medical and audiological information about hearing disorders in childhood. Copies of the kit and a report can be obtained by writing to the address given in the preceding entry.

Freeman, R.D.; Carbin, C.; and Boese, R.J. *Can't Your Child Hear?* Baltimore: University Park Press, 1981.

Based on the opinions and experiences of parents of deaf children, this comprehensive inventory of deaf children's needs will assist parents and educators in promoting the health and happiness of deaf children.

Griffith, Anne, and Scott, Dorothy. *Looking Back, Looking Forward*. Toronto: Canadian Hearing Society, 1985.

Discusses issues in deaf education, lists services for the deaf, explores the family relationships of deaf individuals from the preschool years to adulthood, and contains abundant quotations from parents who relate their own experiences with deaf children.

Hasenstab, M. Suzanne. *Language Learning and Otitis Media*. Boston: Little, Brown, 1989.

Provides current information regarding otitis media, the secondary effects associated with recurrent otitis media, how this disease is diagnosed, and the effects of it on language learning.

Ling, Agnes H., and Ling, Daniel. *Aural Habilitation*. Washington: A.G. Bell Association for the Deaf, 1978.

A comprehensive account of speech and language learning for hearing-impaired students, including research findings and many excellent examples of pedagogy.

McAnally, P.L.; Rose, S.; and Quigley, S.P. *Language Learning Practices With Deaf Children*. Boston: Little, Brown, 1987.

Examines language development for hearing and prelinguistically deaf children, includes a historical review of teaching methods and materials, and devotes its final chapter to the specialized aspects of language development.

Milo, E. Bishop, ed. *Mainstreaming: Practical Ideas for Educating Hearing-Impaired Students*. Washington: A.G. Bell Association for the Deaf, 1979.

Focuses on the adolescent and young adult, presents mainstreaming as an educational process, provides specific strategies for teachers, and describes interpreting, tutoring, and other support services in detail.

Northcott, Winifred H., ed. *The Hearing Impaired Child in a Regular Classroom*. Washington: A.G. Bell Association for the Deaf, 1973.

Describes the philosophy of an integration program and provides guidelines and strategies for regular classroom teachers and support for specialists at the preschool through secondary levels.

Osguthorpe, Russel T. *The Tutor/Notetaker*. Washington: A.G. Bell Association for the Deaf, 1980.

Training manual for tutors and notetakers at the National Technical Institute for the Deaf.

Streng, Alice H.; Kretschmer, L.W.; and Kretschmer, R.R. *Language, Learning and Deafness*. New York: Grune and Stratton, 1978.

Describes in detail the methods to use in an experience-based, integrated language arts program.

Strong, Michael. *Language Learning and Deafness*. New York: Cambridge University Press, 1988.

A collection of current research reports and position papers providing information on problems and progress in language education for the deaf and hard of hearing.

Winefield, Richard. *Never the Twain Shall Meet*. Washington: Gallaudet University Press, 1987.

Chronicles the lives of Alexander Graham Bell and Edward Miner Gallaudet as a background to the debate over the use of sign language with deaf children.

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